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Cytokine Levels in the Serum of Patients with Chronic Kidney Insufficiency Before and After Hemodialysis

Romanova Y., Markelova M., Laikov A., Fakhrutdinova L., Hasanova M., Malanin S., Chernov V., Salafutdinov I., Khaiboullina S.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016, Springer Science+Business Media New York.Chronic kidney insufficiency (CKI) is often the end point of a broad range of chronic kidney diseases and characterized with decreasing number of functionally active nephrons. Pathophysiological CKI is characterized by decreased glomerular filtration, which leads to accumulation of life-threatening toxic metabolites. Hemodialysis is the main therapeutic measure aimed to prolong patient's life until kidney transplant is available. The goal of this study is to analyze serum level of 21 cytokines in CKI. We have found that the serum level of several (IL-2Rα, IL-3, IL-12 (p40), IL-16, IL-18, HGF, MIF, CSF-1, MCP-3, CXCL12, SCF, IFN-α2, LIF, β-NGF, and CXCL1) cytokines and chemokines was upregulated in CKI without hemodialysis as compared to controls ($p = 0.005$). Interestingly, serum cytokines were also upregulated in serum of CKI patients who received hemodialysis. Upregulated cytokines are associated with inflammation and activation of Th1 lymphocytes. We suggest that hemodialysis has limited effect on serum cytokine levels. It could be concluded that therapeutic effect of hemodialysis is not associated with removal of inflammatory cytokines from circulation. Further studies will help better define the underlying cause of an increased inflammation in CKI and identify the laboratory criteria for anti-inflammatory therapy.

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Keywords

Chronic kidney disease, Cytokines, Hemodialysis, Inflammation, Serum

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